the scope of the application and the patent claims is not identical, the ...[examiner] must ask whether the former *defines merely an obvious variation* of the latter") (emphasis added).

In the present application, applicants' independent claim describes in combination "... a contrast enhancement layer comprising a reversible photo bleachable material including nanoparticles ... said nanoparticles providing at least part of said photobleaching... exposing photoresist after passing through said contrast enhancement layer." In contrast, in copending application 10/792,377, the assignee claims a "... a medium having semiconductor nano-sized particles dispersed therein, said semiconductor nano-sized particles having a refractive index higher than said medium ... collecting on said photoresist a portion of said light passing through ... semiconductor nano-sized particle dispersed medium ..."

Thus, the claims of the present application are not merely an obvious variation over the claims of the copending application. Furthermore, unlike the situation in *In re Berg* cited above (and cited by the Examiner), the claims herein were invented by a different inventive entity as compared to the claims of the copending application and the claims herein could not be supported by the specification of the copending application or vice versa. Accordingly, there is no unfair extension of the patent monopoly that the judicially created double patenting doctrine is designed to prevent.

All outstanding issues have been addressed and this application is in condition for allowance. Should any minor issues remain outstanding, the Examiner should contact the undersigned at the telephone number listed below so they can be resolved expeditiously without need of a further written action.

Respectfully submitted,

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ATTACHMENT
AMENDED CLAIMS OF COPENDING PATENT APPLICATION 10/792,377

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently amended) A method of ~~improving the resolution of~~performing immersion photolithography comprising:

projecting light along an optical path to form a light pattern on a substrate comprising a wafer that is at least in part coated with a layer comprising photoresist, ~~having photoresist thereon,~~ at least a portion of said light passing through (a) at least one photomask with at least one pattern, (b) at least final optics, and (c) a medium having semiconductor nano-sized particles dispersed therein, said semiconductor nano-sized particles having a refractive index higher than said medium, -said semiconductor nano-sized particle dispersed medium filling up ~~the~~ space between said final optics and said substrate;

collecting, on said photoresist, a portion of said light passing through said at least one photomask, said final optics and said semiconductor nano-sized particle dispersed medium; and

~~at least a portion of said optical path intersecting with semiconductor nano-sized particles dispersed in a medium, said semiconductor nano-sized particles having a refractive index higher than said medium, and~~

changing the solubility of said photoresist at least in part in response to said collected light pattern.

2. (cancelled)

3. (cancelled)

4. (Currently amended) ~~A~~ The method of claim 1 wherein said medium comprises a liquid, polymer or a gel.

5. (Currently amended) ~~A~~ The method of claim ~~4~~ 1 wherein ~~the~~ said ~~liquid~~ medium comprises water.

6. (Currently amended) ~~A~~ The method of claim 1 wherein said nano-sized ~~particles~~ particle ~~are~~ dispersed medium~~in a liquid, polymer or a gel, said liquid, polymer or gel are~~ is ~~flown~~ flowed continuously through the space between ~~a last lens~~said final optics and ~~a~~ said ~~photoresist~~ coated wafer.

7. (Currently amended) ~~A~~ The method of claim 6 wherein ~~the~~ said ~~liquid~~ medium comprises water.

8. (Previously presented) The method of claim 1 wherein the said semiconductor nano-sized particles are selected from the group consisting of C, Si, Ge, CuCl, CuBr, CuI, AgCl, AgBr, AgI, Ag_2S, CaO, MgO, ZnO, $Mg_xZn_{1-x}O$, ZnS, HgS, ZnSe, CdS, CdSe, CdTe, HgTe, PbS, BN, AlN, GaN, $Al_xGa_{1-x}N$, GaP GaAs, GaSb, InP, InAs, $In_xGa_{1-x}As$, SiC, $Si_{1-x}Ge_x$, Si_3N_4, ZrN, CaF_2, YF_3, Al_2O_3, SiO_2, TiO_2, Cu_2O, Zr_2O_3, ZrO_2, SnO_2, YSi_2, $GaInP_2$, Cd_3P_2, Fe_2S, Cu_2S, $CuIn_2S_2$, MoS_2, In_2S_3, Bi_2S_3, $CuIn_2Se_2$, In_2Se_3, HgI_2, PbI_2, Landthoids oxides, and their various alloys.

Claims 9-14 (Canceled)

15. (Previously presented) The method of claim 1 wherein said semiconductor nano-sized particles have bandgaps.

16. (Currently amended) The method of claim 1 wherein said nano-sized particles are transparent at least at one of lithographic wavelengths.

17. (Previously presented) The method of claim 1 wherein said nano-sized particles comprise nanocrystals.

18. (Previously presented) The method of claim 1 wherein said light has a wavelength of 193 nm.

19. (Previously presented) The method of claim 1 wherein said light has a wavelength of 157 nm.

20-29. (cancelled).

30. (Previously presented) The method of claim 1 wherein said light has a wavelength of 248 nm.

31. (Previously presented) The method of claim 1 wherein said light has a wavelength of 365 nm.

32-35. (cancelled)

36. (Currently amended) The method of claim 4~~22~~ wherein said light has a wavelength of 193 nm.

37. (Currently amended) The method of claim 6~~24~~ wherein said light has a wavelength of 193 nm.

38. (New) The method of claim 1 wherein said nano-sized particles are dispersed in water and said nano-sized particle dispersed water is flowed continuously through the space between said final optics and said coated wafer; said light has a wavelength of 193 nm; and said nano-sized particles comprise nanocrystals that are transparent at 193 nm.

39. (New) The method of claim 5 wherein said light has a wavelength of 193 nm.

40. (New) The method of claim 1 wherein said medium is a liquid, a polymer, or a gel and said nano-sized particle dispersed medium is flowed continuously through the space between said final optics and said coated wafer; said light has a wavelength of 193 nm; and said nano-sized particles comprise nanocrystals that are transparent at 193 nm.

41. (New) The method of claim 1 wherein said nano-sized particles are dispersed in water and said nano-sized particle dispersed water is flowed continuously through the space between said final optics and said coated wafer; said light has a wavelength of 248 nm; and said nano-sized particles comprise nanocrystals that are transparent at 248 nm.

42. (New) The method of claim 5 wherein said light has a wavelength of 248 nm.

43. (New) The method of claim 1 wherein said medium is a liquid, a polymer, or a gel and said nano-sized particle dispersed medium is flowed continuously through the space between said final optics and said coated wafer; said light has a wavelength of 248 nm; and said nano-sized particles comprise nanocrystals that are transparent at 248 nm.

44. (New) The method of claim 1 wherein said nano-sized particles are dispersed in water and said nano-sized particle dispersed water is flowed continuously through the space between said final optics and said coated wafer; said light has a wavelength of 193 nm; and said nano-sized particles comprise nanocrystals.

45. (New) The method of claim 1 wherein said medium is a liquid, a polymer, or a gel and said nano-sized particle dispersed medium is flowed continuously through the

space between said final optics and said coated wafer; said light has a wavelength of 193 nm; and said nano-sized particles comprise nanocrystals.

46. (New) The method of claim 1 wherein said nano-sized particles are dispersed in water and said nano-sized particle dispersed water is flowed continuously through the space between said final optics and said coated wafer; said light has a wavelength of 248 nm; and said nano-sized particles comprise nanocrystals.

47. (New) The method of claim 1 wherein said medium is a liquid, a polymer, or a gel and said nano-sized particle dispersed medium is flowed continuously through the space between said final optics and said coated wafer; said light has a wavelength of 248 nm; and said nano-sized particles comprise nanocrystals.

48 (New) A system for performing immersion photolithography comprising:

a wafer stage supporting a wafer that is at least in part coated with a layer comprising photoresist,

a light projection arrangement having an optical path comprising at least one photomask with at least one pattern, at least final optics, and a medium having semiconductor nano-sized particles dispersed therein, said semiconductor nano-sized particles having a refractive index higher than said medium, said semiconductor nano-sized particle dispersed medium filling up space between said final optics and said substrate, said light projection arrangement being structured to project light along said optical path to form a light pattern on the substrate, at least a portion of said light passing through said at least one photomask with at least one pattern, said at least final optics, and said medium having semiconductor nano-sized particles dispersed therein,

wherein said photoresist collects a portion of said light passing through said at least one photomask, said final optics and said semiconductor nano-sized particle dispersed medium, and changes solubility at least in part in response to said collected light pattern.

49. (new) The system of claim 48 wherein said medium comprises a liquid, polymer or a gel.

50. (new) The system of claim 48 wherein said medium comprises water.

51. (new) The system of claim 48 wherein said nano-sized particle dispersed medium is flowed continuously through the space between said final optics and said coated wafer.

52. (new) The system of claim 48 wherein the said semiconductor nano-sized particles are selected from the group consisting of C, Si, Ge, CuCl, CuBr, CuI, AgCl, AgBr, AgI, Ag_2S, CaO, MgO, ZnO, $Mg_xZn_{1-x}O$, ZnS, HgS, ZnSe, CdS, CdSe, CdTe, HgTe, PbS, BN, AlN, GaN, $Al_xGa_{1-x}N$, GaP GaAs, GaSb, InP, InAs, $In_xGa_{1-x}As$, SiC, $Si_{1-x}Ge_x$, Si_3N_4, ZrN, CaF_2, YF_3, Al_2O_3, SiO_2, TiO_2, Cu_2O, Zr_2O_3, ZrO_2, SnO_2, YSi_2, $GaInP_2$, Cd_3P_2, Fe_2S, Cu_2S, $CuIn_2S_2$, MoS_2, In_2S_3, Bi_2S_3, $CuIn_2Se_2$, In_2Se_3, HgI_2, PbI_2, Landthoids oxides, and their various alloys.

53. (new) The system of claim 48 wherein said semiconductor nano-sized particles have bandgaps.

54. (new) The system of claim 48 wherein said nano-sized particles are transparent at least at one of lithographic wavelengths.

55. (new) The system of claim 48 wherein said nano-sized particles comprise nanocrystals.

56. (new) The system of claim 48 wherein said light has a wavelength of 193 nm.

57. (new) The system of claim 48 wherein said light has a wavelength of 157 nm.

58. (new) The system of claim 48 wherein said light has a wavelength of 248 nm.

59. (new) The system of claim 48 wherein said light has a wavelength of 365 nm.

60. (new) The system of claim 48 wherein said nano-sized particles are dispersed in water and said nano-sized particle dispersed water is flowed continuously through the space between said final optics and said coated wafer; said light has a wavelength of 193 nm; and said nano-sized particles comprise nanocrystals that are transparent at 193 nm.

61. (New) The system of claim 48 wherein said medium is a liquid, a polymer, or a gel and said nano-sized particle dispersed medium is flowed continuously through the space between said final optics and said coated wafer; said light has a wavelength of 193 nm; and said nano-sized particles comprise nanocrystals that are transparent at 193 nm.

62. (New) The system of claim 48 wherein said nano-sized particles are dispersed in water and said nano-sized particle dispersed water is flowed continuously through the space between said final optics and said coated wafer; said light has a wavelength of 248 nm; and said nano-sized particles comprise nanocrystals that are transparent at 248 nm.

63. (New) The system of claim 48 wherein said medium is a liquid, a polymer, or a gel and said nano-sized particle dispersed medium is flowed continuously through the space between said final optics and said coated wafer; said light has a wavelength of

248 nm; and said nano-sized particles comprise nanocrystals that are transparent at 248 nm.

64. (New) The system of claim 48 wherein said nano-sized particles are dispersed in water and said nano-sized particle dispersed water is flowed continuously through the space between said final optics and said coated wafer; said light has a wavelength of 193 nm; and said nano-sized particles comprise nanocrystals.

65. (New) The system of claim 48 wherein said medium is a liquid, a polymer, or a gel and said nano-sized particle dispersed medium is flowed continuously through the space between said final optics and said coated wafer; said light has a wavelength of 193 nm; and said nano-sized particles comprise nanocrystals.

66. (New) The system of claim 48 wherein said nano-sized particles are dispersed in water and said nano-sized particle dispersed water is flowed continuously through the space between said final optics and said coated wafer; said light has a wavelength of 248 nm; and said nano-sized particles comprise nanocrystals.

67. (New) The system of claim 48 wherein said medium is a liquid, a polymer, or a gel and said nano-sized particle dispersed medium is flowed continuously through the space between said final optics and said coated wafer; said light has a wavelength of 248 nm; and said nano-sized particles comprise nanocrystals.